

PHARMACEUTICS - I (BP103T) | B.Pharm 1st Semester

Historical background and development of profession of pharmacy



UNIT-1 | Part 1



By:- PRANJALI MAM

Contents to be covered inside this topics



A. HISTORY OF PHARMACY PROFESSION IN INDIA

Pharmacy

Pharmacy is the art, science and economics of preparing and dispensing medications and providing drug-related information to the public.



The word **“pharmacy”** was coined from the Greek word **“pharmakon”** meaning **“medicine”** or **“drug”**. Therefore, a **pharmacist** is a **“medicine or drug man”**

Pharmacist is a trained person who is certified to make, sell or distribute medicine and medicine compounds



The place where the pharmacist works is the **pharmacy**, which can be a shop, or a part of hospital

History of profession in India in relation to pharmacy education

The **allopathic system of medicine** was introduced **in India during the British rule**. It was mainly meant for the ruling class.

By the **19th century** it became popular and was used for the common people also.

In the beginning the medicines were **imported from Europe**. Later they were **manufactured in India**.

The **Bengal Chemical and Pharmaceutical Works** was set up by **Acharya P.C. Ray** in **1901** in **Calcutta**.

Prof. T.K. Gujjar set up a **small factory in Bombay at Parel** in **1903** and the **Alembic Chemical Works** in **1907** at **Baroda**.

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B. INDUSTRY AND ORGANIZATION

- The foundation stone of the modern Indian pharmaceutical industry was laid in the beginning of the 20th century when, in 1901, a small factory known as The 'Bengal Chemical and Pharmaceutical Works' was established in Calcutta.
- Prior to India's Independence, bulk quantity were imported and a very negligible quantity was manufactured in India.
- The country was dependent largely on the United Kingdom, France and Germany for its requirements of drugs and medicines.



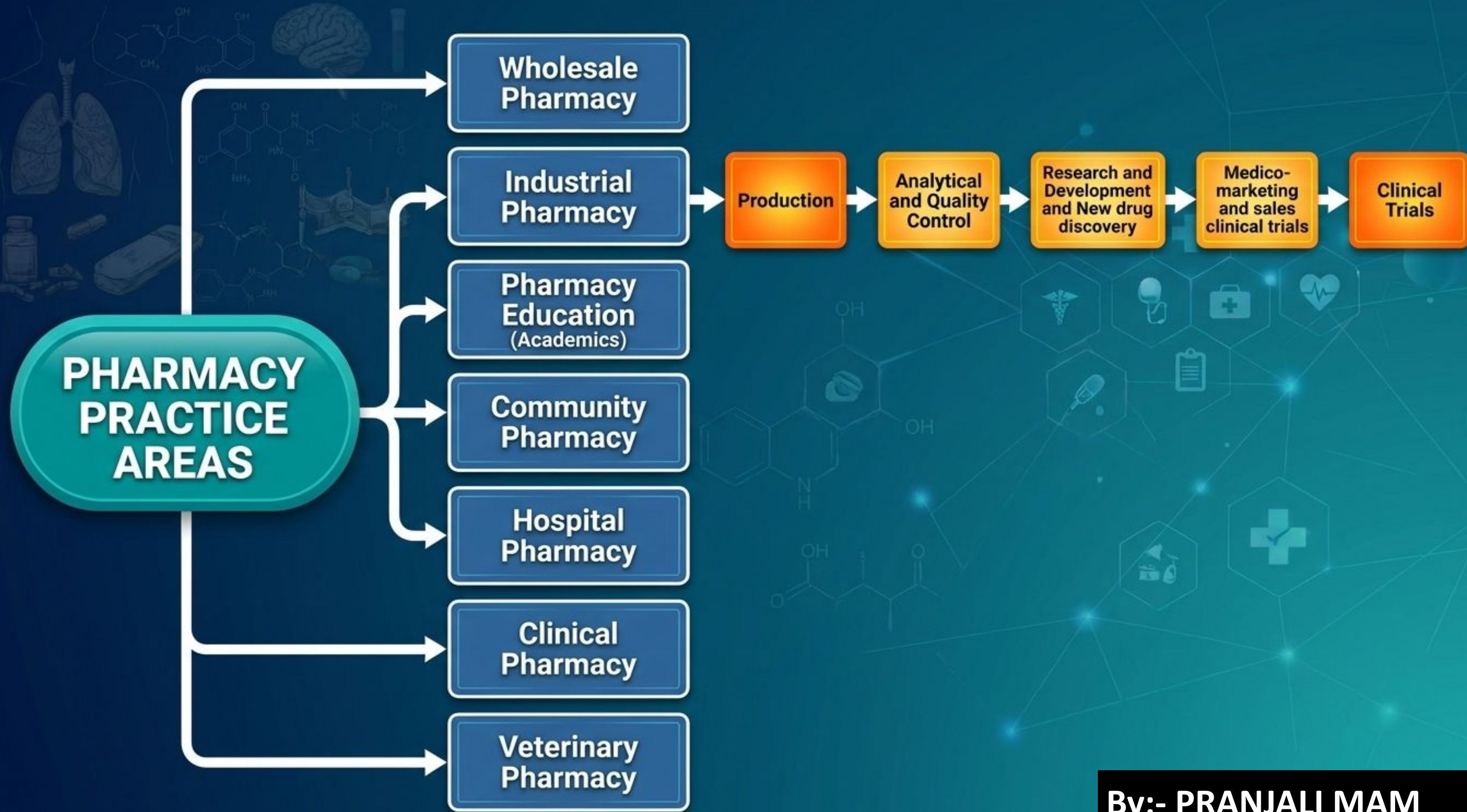
C. PHARMACY AS A CAREER

Pharmacy is an important component of the medical and healthcare system. The pharmaceutical industry as a whole is concerned with the manufacturing, preparation, and marketing of drugs. It is of vital importance to the economy and employs a large number of scientists, technicians, and blue-collar workers.

✓ **Members of this profession (Pharmacists) must include the following points :-**

- Have a comprehensive knowledge of drugs, including their composition, chemical and physical properties, and uses.
- Be familiar with the effects of various drugs on people's health
- Have a thorough understanding of procedures for testing drug purity & strength.












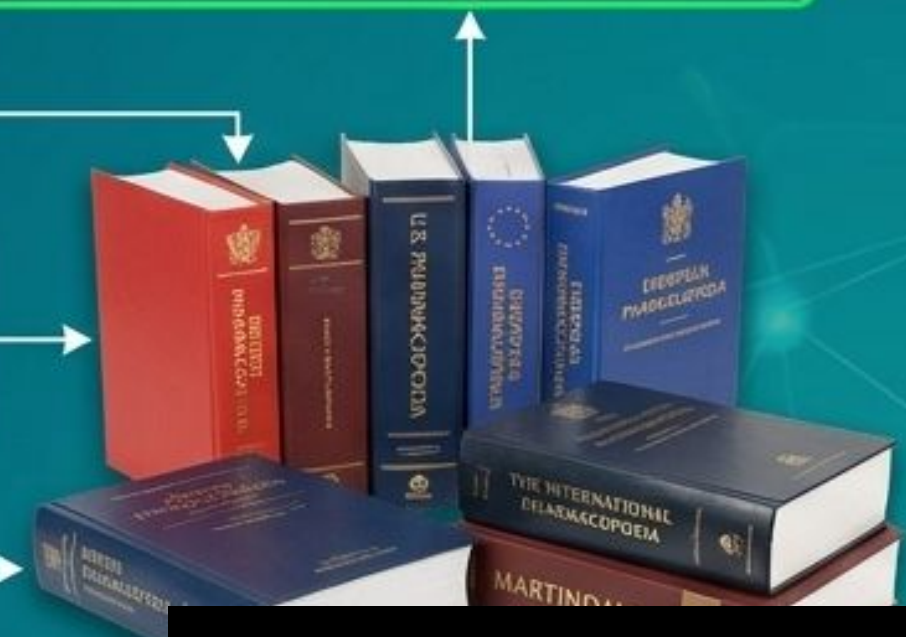
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PRACTICE AREAS	DESCRIPTION
Wholesale Pharmacy	It offers opportunities to a limited number of pharmacists to run wholesale business of drugs and medicines. The wholesalers serve as an intermediary between manufacturer and retailer .
Industrial Pharmacy	Pharmaceutical industry offers opportunity to pharmacist of all educational levels. It provides job to a pharmacist in the following fields: <ul style="list-style-type: none"> • Production • Analytical and Quality Control • Research and Development and New drug discovery • Medico-marketing and sales clinical trials • Clinical Trials
Pharmacy Education (Academics)	Due to rapid growth of pharmaceutical industry and expansion of health services in the country, there is steep increase in the number of pharmacy teaching institutions in the country
Community Pharmacy	A community pharmacy is a healthcare facility that is able to provide pharmacy services to people in a local area or community. A community pharmacy dispenses medicine and typically involves a registered pharmacist with the education, skills and competence to deliver professional services to the community
Hospital Pharmacy	Hospital pharmacists work in a hospital pharmacy service, primarily within the public sector. They are experts in the field of medicines and are not only responsible for the dispensing of prescriptions but also the purchase, manufacture and quality testing of all medicines used in a hospital
Clinical Pharmacy	Direct patient care service that optimizes the use of medication and promotes health, wellness, and disease prevention
Veterinary Pharmacy	Called animal pharmacies may fall in the category of hospital pharmacy, retail pharmacy. Veterinary pharmacies stock different varieties and different strengths of medications to fulfill the pharmaceutical needs of animals

PHARMACOPOEIAS

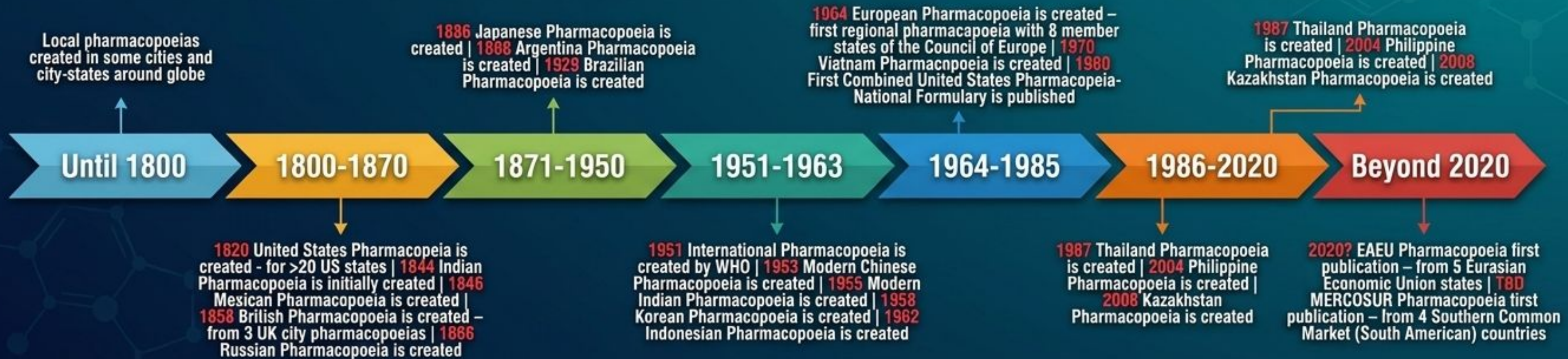
A. HISTORY OF PHARMACOPOEIA

-  Every country has legislation on pharmaceutical preparations that sets standards and obligatory quality indices for medicaments, raw materials and preparations employed in the manufacture of drugs.
-  These regulations are presented in separate articles, general and specific, relating to individual drugs, and are published in the form of a book called a **Pharmacopoeia**.
-  The word pharmacopeia is derived from the Greek words pharmakon, means a drug or medicine and poieo, means to make.
-  **Pharmacopoeia** is an official book published by the National government containing the approved list of drugs with description, preparation, tests for identification, purity & potency.
-  It gives the official name of each drug along with synonyms and recommended average adult dose.
-  The first **British Pharmacopoeia. (B.P.)** was published in **1864**. It was including monographs on benzoic acid, gallic acid, tartaric acid, tannic acid, camphor, lactose, sucrose and seven alkaloids along with their salts.
-  The first **United State Pharmacopoeia (U.S.P.)** was released on **15th December, 1820**.



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TIMELINE INDICATING YEARS WHEN MANY OF THE PHARMACOPOEIAS WERE CREATED



LIST OF PHARMACOPOEIA IN VARIOUS COUNTRIES

- Indian Pharmacopoeia (I.P.)

- British Pharmacopoeia (B.P.)

- United states pharmacopoeia (U.S.P.)

- European Pharmacopoeia (E.P.)

- International Pharmacopoeia

- Japanese Pharmacopoeia

- Martindale Extra Pharmacopoeia

- British Pharmaceutical Codex

- Pharmaceutical Codex

- British National Formulary

- United State National Formulary

- National Formulary (N.F.)

- United State Dispensatory

- Indian Pharmaceutical Codex

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B. INDIAN PHARMACOPOEIA

Introduction to Indian Pharmacopoeia

- **Pharmacopoeia Commission (IPC)** is an autonomous institution of the Ministry of Health and Family Welfare which sets standards for all drugs that are manufactured, sold and consumed in India.
- The set of standards are published under the title **Indian Pharmacopoeia (IP)** which has been modelled over and historically follows from the **British Pharmacopoeia**.

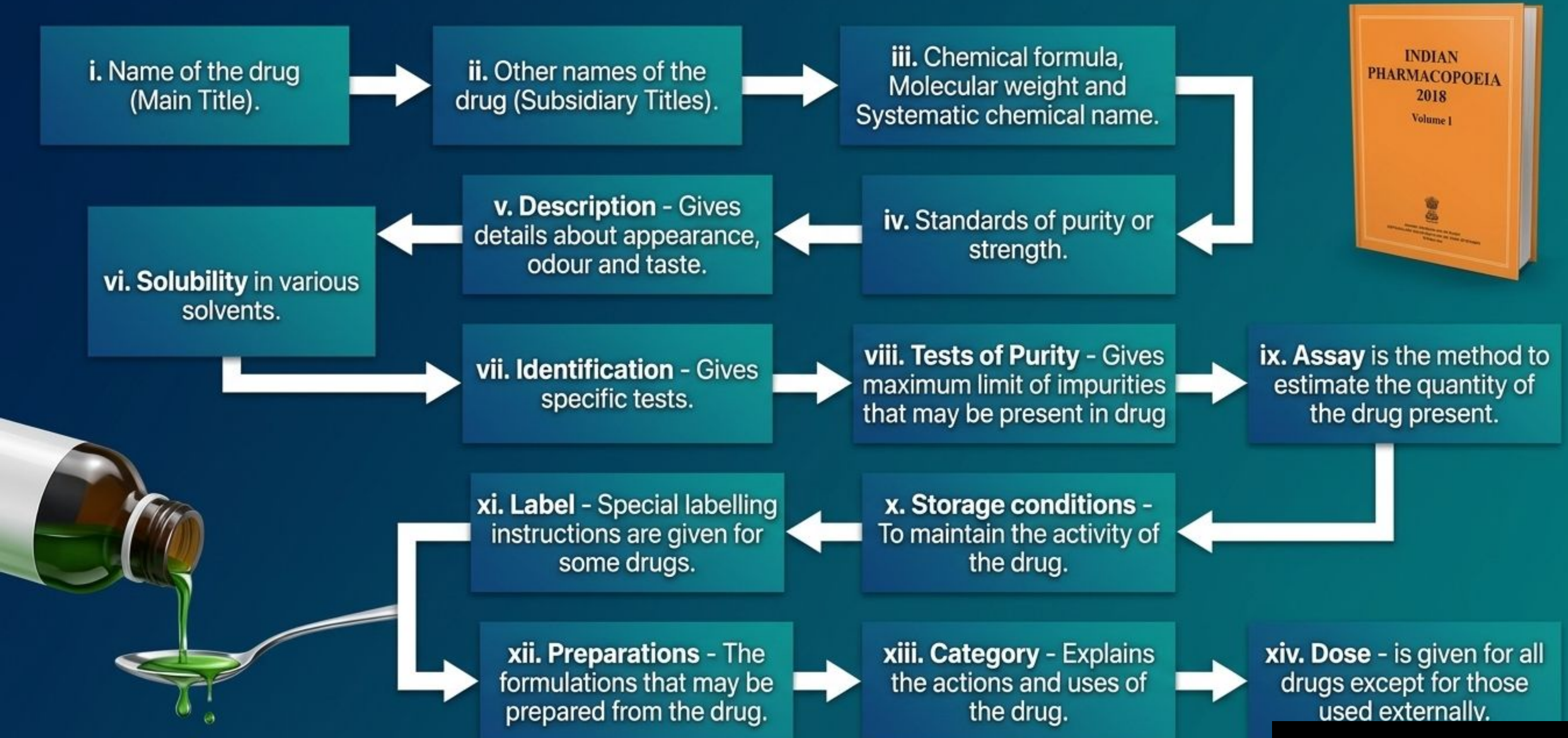
❖ Immunoprecipitation (IP)

- It is the technique of precipitating a protein **antigen** out of solution using an **antibody** that specifically binds to that particular protein.
- This process can be used to **isolate and concentrate a particular protein** from a sample containing many thousands of different proteins.
- **Immunoprecipitation** requires that the antibody be **coupled** to a solid substrate at some point in the procedure

Salient features of indian pharmacopeia

- ✓ **IP** is an official document meant for overall **Quality Control** and **Assurance** of Pharmaceutical products marketed in India by way of contributing on their safety, efficacy and affordability.
- ✓ Collection of **authoritative procedures of analysis and specifications** for Drugs.
- ✓ The IP, or any part of it, has got **legal status** under the **Second Schedule** of the **Drugs & Cosmetics Act, 1940** and **Rules 1945** there under.
- ✓ For **identity, purity** and **strength** of drugs essentially required from health care perspective of human beings and animals.
- ✓ **Authoritative** in nature.
- ✓ **Enforced** by the **Regulatory authorities** for quality control of medicines
- ✓ During **Quality Assurance** and at the time of dispute in the court of law the IP standards are legally acceptable.

Monographs: Official drugs and other details about them are given in "Mono graphs". Pharmacopoeial monographs give the following details, in the order given below:



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ADDENDUM-2015 TO INDIAN PHARMACOPOEIA 2014

The Addendum-2015 to Indian Pharmacopoeia 2014 contains the Notices, Preface, the Structure of the IPC, Acknowledgements, Introduction and the General Chapters.

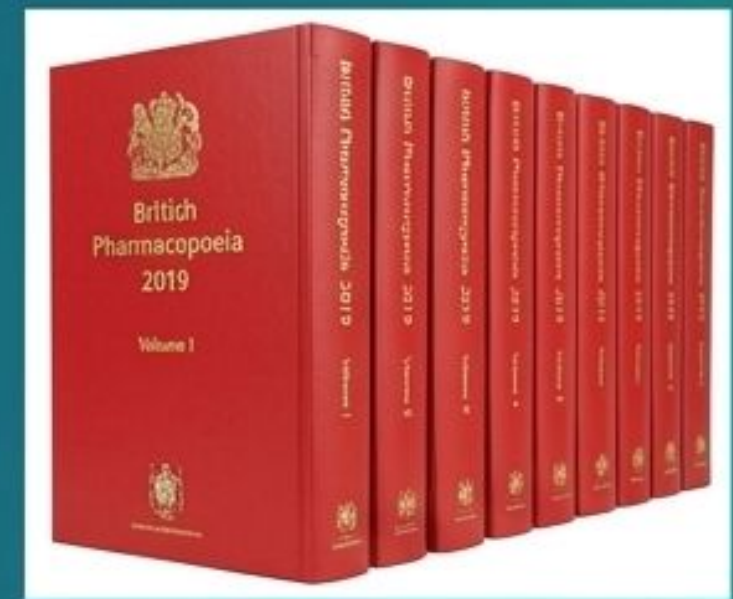
Specific Features of Addendum -2015: (i) **57** new Chemical monographs | (ii) **13** new Herbal monographs | (iii) **02** new Human Vaccines Monographs | (iv) **10** Radiopharmaceutical Monographs | (v) **06** Revised monographs | (vi) **29** Revised tests | (vii) About **20** new IR spectra's

DIFFERENT EDITIONS OF INDIAN PHARMACOPOEIA

EDITION	SUPPLEMENT	FEATURES
1 st - 1955	1960	<ul style="list-style-type: none"> Covers 986 monographs Titles of monograph in Latin language Weight and measure in metric system
2 nd - 1966	1975	<ul style="list-style-type: none"> Titles of monograph in Latin language to English Name of drugs first came New analytical technique was added
3 rd - 1985 (2 Volume)	1989 and 1991	<ul style="list-style-type: none"> Dissolution had been added Microbial limit test prescribed for liquid preparation. Flame photometry electrophoresis, fluorometry was added
4 th - 1996 (2 Volume)	2000, 2002 and 2005	<ul style="list-style-type: none"> Computer generated formulae was used. IR and UV spectrophotometry test was added Contain 1149 monographs and 123 appendices
5 th - 2007 (3 Volume)	2008	<ul style="list-style-type: none"> Volume one contain general notice, structure of IPC Volume three contain general monographs
6 th - 2010 (3 Volume)	2012	<ul style="list-style-type: none"> Products of biotechnology, herbal products was added. Antiretroviral drug was added
7 th - 2014 (4 Volume)	2015 and 2016	<ul style="list-style-type: none"> Contain 2567 monographs Radiopharmaceutical monographs was added
8 th - 2018 (4 Volume)	2019	<ul style="list-style-type: none"> General chemical test and TLC eliminated More specific test like IR, UV Spectrophotometer was added Pyrogen test replaced by Bacterial Endotoxin Test

B. BRITISH PHARMACOPOEIA

The **British Pharmacopoeia (BP)** is the **national pharmacopoeia** of the **United Kingdom**. It is an **annually published collection** of quality standards for **UK medicinal substances**, which is used by individuals and organizations involved in **pharmaceutical research, development, manufacture and testing**. It contains **all texts and monographs** of the **European Pharmacopoeia** (signposted with a chaplet of stars), as well as the **national standards** developed by the BP.



- It has been published annually.
- In BP **2007** monographs has been introduced for material.
- Specifically used in preparation of Traditional Chinese Medicines.

- Term "Prolonged release" has been replaced the term „Slow“ and the term "Gastro-resistant" has been replaced with „Enteric coated“ in number of monographs.
- BP **2008** contains approximately 3100 monographs for substances preparations and articles used in practice.

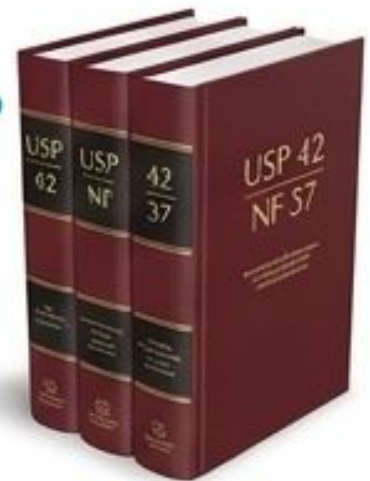
- It has been made effective from **1st January 2008**.
- BP **2007-2009** were given in 06 Volumes i.e. Vol. I to Vol. VI.

- ✓ First edition of BP was published in **1864** & consist of two sections
| Part I: Materia Medica | Part II: Preparation & compounds
- | Second edition of BP was published in **1867**
- | Third edition of BP was published in **1885**
- | Fourth edition of BP was published in **1898**
- | Eighth edition of BP was published in **1953**:
Titles of drugs & preparations were in English instead of Latin and metric system.

Volume and content of British pharmacopeias	
Volume I and II	Medicinal substances
Volume III	Formulated preparations <ul style="list-style-type: none"> • Blood related products • Immunological products radiopharmaceutical preparations surgical materials • Homoeopathic preparations.
Volume IV	Appendices <ul style="list-style-type: none"> • Infrared reference spectra • Index
Volume V	British pharmacopoeia (veterinary)
Volume VI (CD ROM version)	British pharmacopoeia (veterinary)

B. UNITED STATES PHARMACOPEIA (USP)

The United States Pharmacopeia is a pharmacopeia for the United States published annually by the United States Pharmacopeial Convention, a nonprofit organization that owns the trademark and also owns the copyright on the pharmacopeia itself.



The first edition of United States Pharmacopoeia was published by United States Pharmacopoeial Convention on December 15th, 1820 in both Latin and English.

It listed 217 drugs considered worthy of recognition.

It was earlier revised every 10 years but after 1940, the convention decided that it must be revised after every 5 years.

Interim supplements were issued whenever necessary to maintain satisfactory standards.

USP XIX (1975) was the last USP to be published individually as subsequent editions were published in combination with the National Formulary.

C. EXTRA PHARMACOPOEIA (MARTINDALE)

Martindale contains information on drugs in clinical use worldwide, as well as selected investigational and veterinary drugs, herbal and complementary medicines, pharmaceutical excipients, vitamins and nutritional agents, vaccines, radiopharmaceuticals, contrast media and diagnostic agents, medicinal gases, drugs of abuse and recreational drugs, toxic substances, disinfectants, and pesticides.



It is published by the Royal Pharmaceutical Society of Great Britain and was first published in 1883 by William Martindale.

It is an authoritative reference book on drugs and medicines users.

It aims to provide practicing pharmacists and physicians with up to date information on all drug substances, official, unofficial & proprietary that are currently used in pharmac

QUESTIONS FROM THE ABOVE TOPICS

Very Short Answer Questions (2 marks)

1. Define community pharmacy
2. Write down the editions of I.P.

Short Answer Questions (4 marks)

- Q 1. Write Notes on History of Pharmacy Profession in India
- Q 2. Write a short note on Career in Pharmacy Field
- Q 3. List out all Pharmacy practice areas
- Q 5. Write short notes on the following topics
 - a. British Pharmacopoeia
 - b. United States Pharmacopoeia
 - c. Martindale

Long Answer Questions (8 marks)

- Q 1. Write notes on History of Pharmacopoeias & list of different Pharmacopoeias
- Q 2. Briefly explain about Indian Pharmacopoeia with special emphasis on its silent features